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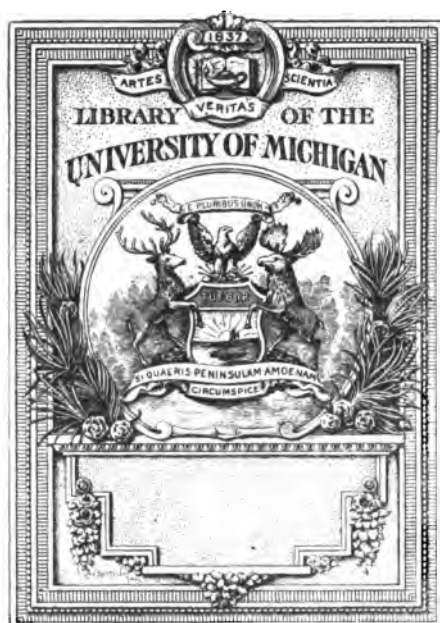
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U. S. Weather Bureau - Brief list of Meteorological text-books  
and Reference books.

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Issued October 10, 1910.

U. S. DEPARTMENT OF AGRICULTURE,  
U. S. WEATHER BUREAU.

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UNIV. OF MICHIGAN  
JUL 26 1910

BRIEF LIST OF  
METEOROLOGICAL TEXT-BOOKS  
AND REFERENCE BOOKS.

A SELECTION OF WORKS SUITABLE FOR  
GENERAL, SCIENTIFIC, AND UNIVERSITY  
LIBRARIES IN THE UNITED STATES.

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SECOND EDITION.

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Prepared under the direction of WILLIS L. MOORE, Chief U. S. Weather Bureau,

BY

C. FITZHUGH TALMAN,  
LIBRARIAN.



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## INTRODUCTION.

This compilation is designed, primarily, to guide the librarians of large general, scientific, and university libraries in the United States in selecting meteorological literature for their collections. It is also intended to provide a ready means of complying with the many requests received by the Weather Bureau from teachers, students, and others for the titles of books dealing with meteorology and its several branches.

While there is, of course, room for much difference of opinion as to what should be included in a list of about one hundred and fifty works, selected from many thousand, the present compilation is the fruit of several years' experience in dealing with the literature of this subject, and will probably meet the requirements of the majority of American readers and students. Obviously, the limited scope of the list makes it necessary to exclude a great many important memoirs dealing with special topics and addressed to the specialist rather than the general student; also the innumerable periodical publications recording the results of observations at meteorological observatories and stations throughout the world; and many scientific journals devoted wholly or partly to meteorology.

Lastly, attention is called to the much more extensive bibliographical information to be found in such publications as the annual meteorological volumes of the International Catalogue of Scientific Literature, the Royal Society's Catalogue of Scientific Papers (a meteorological subject-index to which is in preparation), the annual Kosmische Physik volume of the Fortschritte der Physik, and, for the earlier literature on certain branches, the Bibliography of Meteorology published by the U. S. Signal Office in 1889-1891.

(3)



### **CLASSIFICATION.**

1. Bibliography.
2. Meteorology in general.
3. Weather. Weather charts. Weather forecasts.
4. Atmospheric pressure and circulation. Dynamic meteorology.
5. Storms. Marine meteorology.
6. Economic effects of extreme temperatures (frost, etc.).
7. Clouds.
8. Atmospheric electricity. Thunderstorms. Lightning protection.
9. Atmospheric optics.
10. Instruments. Instructions to observers.
11. Tables.
12. Upper-air investigations.
13. Hydrology. Rivers and floods.
14. Phenology. Agricultural meteorology.
15. Physiological and medical meteorology.
16. Climatology.
17. Climatography.

## BRIEF LIST OF METEOROLOGICAL TEXT-BOOKS AND REFERENCE BOOKS.

### 1. BIBLIOGRAPHY.

- \* **International catalogue of scientific literature** . . . F. Meteorology, including terrestrial magnetism. [Annual.] London. 1902-date. 8°.  
Continues, in classified form, the Royal society catalogue of scientific papers.
- \* **Fortschritte der Physik** . . . Dargestellt von der Deutschen physikalischen Gesellschaft. [Annual.] Braunschweig (*formerly* Berlin). 1846-date. 8°.  
A classed catalogue of the physical literature of the year, with abstracts of the more important publications. Now published in three annual parts, of which the third, "Kosmische Physik" (*formerly* "Physik der Erde"), contains the meteorological titles.

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Lists of current meteorological literature are also published regularly in the following periodicals:

- \* Halbmönatliches Literaturverzeichnis der "Fortschritte der Physik." Braunschweig.
- \* Meteorologische Zeitschrift. Braunschweig.
- \* Monthly weather review. Washington.
- \* Naturæ novitates. Berlin.
- \* Quarterly journal of the Royal meteorological society. London.

### 2. METEOROLOGY IN GENERAL.

- Abbe, Cleveland.** The aims and methods of meteorological work, especially as conducted by national and state weather services. Baltimore. 1899. [219]-330 p. 4°. (Maryland. Weather service. Special publication, v. 1, pt. 3a.)
- \* **American meteorological journal.** May, 1884-April, 1896. [Monthly.] v. 1, Detroit; 2-8, Ann Arbor; 9-12, Boston. 1884-1896. 8°.
- Angot, Alfred.** Traité élémentaire de météorologie. 2d ed. Paris. 1907. vi, 417 p. 8°.  
The leading text-book of the subject in French. Elementary and nonmathematical.
- Bebber, W. J. van.** Lehrbuch der Meteorologie für Studierende und zum Gebrauche in der Praxis. Stuttgart. 1890. xii, 391 p. 8°.  
Intermediate. Contains abundant numerical data.
- Börnstein, R.** Leitfaden der Wetterkunde; gemeinverständlich bearbeitet . . . 2d ed. Braunschweig. 1906. xi, 230 p. 8°.  
Elementary or intermediate. One of the most useful short treatises. Contains account of the national weather services of the world.
- Buchan, Alexander.** Handy book of meteorology. 2d ed. Edinburgh, etc. 1868. x, 371 p. 12°.
- Davis, William Morris.** Elementary meteorology. Boston. 1894. xi, 355 p. 8°.  
Intermediate rather than elementary. Special attention to theory.
- Greely, A. W.** American weather. A popular exposition of the phenomena of the weather, including chapters on hot and cold waves, blizzards, hailstorms and tornadoes, etc., etc. New York. [1888.] xii, 286 p. 8°.
- Hann, Julius.** Lehrbuch der Meteorologie. Leipzig. 1901. xiv, 805 p. 4°.  
*Same.* 2d ed. Leipzig. 1906. xi, 642 p. 4°.  
An invaluable text-book and reference book. The first edition contains much fuller bibliographic references; the second is reduced in size but brought up to date; so that both are needed in a meteorological library.
- International meteorological committee.** Codex of resolutions adopted at international meteorological meetings, 1872-1907 . . . London. 1909. 80 p. 8°.  
(Great Britain. Meteorological office. M. O. no. 200.)  
Digest of the decisions and recommendations adopted by the International meteorological congresses, conferences, and committee; also index to the reports and papers published as appendices to the general reports of meetings

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\* Denotes serials.

\***Meteorologische Zeitschrift.** Jan., 1884–date. [Monthly.] Braunschweig (formerly Berlin, then Wien). 1884–date. 4°.

Issued during the first two years of its existence by the Deutsche meteorologische Gesellschaft; was then consolidated with *Zeitschrift der Oesterreichischen Gesellschaft für Meteorologie* (published from 1866) and has since been published by the Austrian and German societies jointly. General author and subject index to v. 1–25, Braunschweig, 1910.

**Mohn, H.** Grundzüge der Meteorologie . . . 5th ed. Berlin. 1898. xii, 419 p. 8°.

Elementary.

**Moore, Sir John.** Meteorology, practical and applied. 2d ed. London. 1910. xxvii, 492 p. 8°.

**Moore, Willis L.** Descriptive meteorology. New York, etc. 1910. xviii, 344 p. 8°.

A nonmathematical summary of present knowledge.

\***Royal meteorological society, London.** Quarterly journal of the Royal meteorological society. Nov., 1871–date. [Quarterly.] London. 1873–date. 8°.

v. 1–9, "Quarterly journal of the Meteorological society." Continues Proceedings of the same society 1861–1871. General indexes, 1839–1881 and 1882–1900.

**Scott, Robert H.** Elementary meteorology. 4th ed. London. 1887. xiv, 410 p. 12°. (International scientific series.)

Reprinted 1903, etc.

**Sprung, A.** Lehrbuch der Meteorologie. Im Auftrage der Direktion der Deutschen Seewarte bearbeitet . . . Hamburg. 1885. xii, 407 p. 8°.

"The best elementary mathematical statement of the subject."—W. M. Davis.

\***United States. Weather bureau.** Bulletin of the Mount Weather observatory. 1908–date. [Quarterly.] Washington. 1908–date. 8°.

Includes memoirs on meteorological topics, addressed to somewhat advanced readers, and the results of observation and research at Mount Weather and elsewhere.

\***United States. Weather bureau.** Monthly weather review. July, 1872–date. [Monthly.] Washington. 1872–date. 4°.

Prior to July, 1891, published by U. S. Signal service. Originally only a bulletin of current meteorological conditions in the United States and Canada; was gradually enlarged to include the features of a general meteorological journal. Beginning July, 1910, it was further enlarged to include the data of observations at regular and cooperative stations formerly published in the "section reports" of the Climatological service, while its literary features were much restricted, part of them being transferred to the Bulletin of the Mount Weather observatory. Includes a running bibliography of meteorology, climatology, and seismology.

**Waldo, Frank.** Elementary meteorology for high schools and colleges. New York, etc. [1896.] 373 p. 12°.

Brief but comprehensive course for beginners.

**Waldo, Frank.** Modern meteorology; an outline of the growth and present condition of some of its phases. London. 1893. xxiii, 460 p. 12°. (Contemporary science series.)

For somewhat advanced students. Not a general treatise, but a presentation of certain branches, especially apparatus and methods, and the dynamics of the atmosphere.

**Ward, Robert DeCourcy.** Practical exercises in elementary meteorology. Boston. 1899. xiii, 199 p. 8°.

A laboratory method, especially designed for use in American grammar and high schools.

### 3. WEATHER. WEATHER CHARTS. WEATHER FORECASTS.

**Abbe, Cleveland.** Preparatory studies for deductive methods in storm and weather predictions. Washington. 1890. 165 p. 8°. (United States. Signal office. Annual report of the chief signal officer for 1889. Appendix 15.)

**Abercromby, Ralph.** Principles of forecasting by means of weather charts. 2d ed. London. 1885. viii, 123 p. 8°. (Great Britain. Meteorological office. Official, no. 60.)

**Abercromby, Ralph.** Weather; a popular exposition of the nature of weather changes from day to day. London. 1887 (5th impression 1902). xix, 472 p. 12°. (International scientific series.)

**Bebber, W. J. van.** Anleitung zur Aufstellung von Wettervorhersagen für alle Berufsklassen, insbesondere für Schule und Landwirtschaft. 2d ed. Braunschweig. 1908. vi, 38 p. 8°.

- Bebber, W. J. van.** Handbuch der ausübenden Witterungskunde. Geschichte und gegenwärtiger Zustand der Wetterprognose. Stuttgart. 1885-86. 2 v. 8°. v. 1 is a history of weather forecasting from the earliest times; v. 2, an exposition of modern theory and practice.
- Chambers, George F.** The story of the weather; simply told for general readers. London. 1897. 232 p. 24°. (Library of useful stories.)
- Garriott, E. B.** Long-range weather forecasts. Washington. 1904. 68 p. 8°. (United States. Weather bureau. Bulletin 35.)
- Garriott, E. B.** Weather folk-lore and local weather signs. Washington. 1903. 153 p. 8°. (United States. Weather bureau. Bulletin 33.)
- Inwards, Richard.** Weather lore; a collection of proverbs, sayings, and rules concerning the weather. 3d ed. London. 1898. xii, 233 p. 8°. Appendix contains a bibliography of weather lore.
- Kassner, Carl.** Das Wetter und seine Bedeutung für das praktische Leben. Leipzig. 1908. vi, 148 p. 12°. (Wissenschaft und Bildung.) Chiefly noteworthy is part 3, on the relations of the weather to practical life: its effects on agriculture, commerce, transportation, communication, manufactures, health, mortality, crime, etc.
- Moore, Willis L.** Weather forecasting; some facts historical, practical, and theoretical. Washington. 1899. 16 p. 8°. (United States. Weather bureau. Bulletin 25.) Repr. from The Forum, May, 1898.
- Scott, Robert H.** Weather charts and storm warnings. 3d ed. London. 1887. vi, 229 p. 8°.
- Shaw, W. N.** Forecasts of weather. In preparation.

#### 4. ATMOSPHERIC PRESSURE AND CIRCULATION. DYNAMIC METEOROLOGY.

- Abbe, Cleveland.** The mechanics of the earth's atmosphere. A collection of translations. Washington. 1891. 324 p. 8°. (Smithsonian miscellaneous collections, 843.) Translations of papers by Hagen, Helmholtz, Kirchhoff, Oberbeck, Hertz, Bezold, and Margules, and reprints of papers by Rayleigh and Ferrel.
- Abbe, Cleveland.** The mechanics of the earth's atmosphere. A collection of translations. Third collection. Washington. 1910. iv, 617 p. 8°. (Smithsonian miscellaneous collections, v. 51, no. 4.) Translations or reprints of papers by Hadley, Poisson, Tracy, Bräschmann, Erman, Kerber, Sprung, Pockels, Gorodensky, Gold, Guldberg & Mohn, Bezold, Neuhoff, Bauer, and Margules.
- Bigelow, Frank H.** Report on the international cloud observations . . . Washington. 1900. 787 p. 4°. (United States. Weather bureau. Report of the chief, 1898-99, v. 2.) Includes comparative study of the contributions of Ferrel, Oberbeck, Sprung, Hertz, Bezold, etc., and a proposed uniform system of fundamental constants and formulæ.
- Brillouin, Marcell.** Mémoires originaux sur la circulation générale de l'atmosphère. Paris. 1900. xx, 163 p. 8°. Comprises translations and abstracts of the principal contributions of Halley, Hadley, Maury, Ferrel, Werner Siemens, M. Möller, Oberbeck, and H. von Helmholtz.
- Ferrel, William.** A popular treatise on the winds; comprising the general motions of the atmosphere, monsoons, cyclones, tornadoes, waterspouts, hailstorms, etc., etc. New York. 1889 (*and later reprints*). vii, 505 p. 8°.
- Ferrel, William.** Recent advances in meteorology, systematically arranged in the form of a text-book . . . Washington. 1886. 440 p. 8°. (United States. Signal office. Annual report of the chief signal officer, 1885. Appendix 71.) A deductive mathematical discussion of the dynamics of the atmosphere. A list of the rather numerous typographical errors in this work will be found in American meteorological journal, v. 4, July, 1887, p. 118.
- Hildebrandsson, H. Hildebrand, & Teisserenc de Bort, Léon.** Les bases de la météorologie dynamique. Historique—État de nos connaissances. Paris. 1898—. 3 v. 4°. Comprehensive history of the development of dynamic meteorology and review of the data on which it is based. In course of publication.

## 5. STORMS. MARINE METEOROLOGY.

- Algué, José.** The cyclones of the far east. 2d ed. Manila. 1904. 283 p. 4°. (Philippine islands. Weather bureau. Special report of the director.)
- Allingham, William.** A manual of marine meteorology for apprentices and officers of the world's merchant navies. London. 1900. xvi, 182 p. 12°. (Griffin's nautical series.)
- Bigelow, Frank H.** Storms, storm tracks, and weather forecasting. Washington. 1897. 87 p. 8°. (United States. Weather bureau. Bulletin 20.)
- Davis, William Morris.** Whirlwinds, cyclones, and tornadoes. Boston, etc. 1884. 90 p. 24°. ("Science" series.)
- Doberck, W.** The law of storms in the eastern seas. 4th ed. Hongkong. 1904. 44 p. 8°. (Hongkong observatory, no. 3.)
- Eliot, Sir John.** Hand-book of cyclonic storms in the Bay of Bengal for the use of sailors . . . 2d ed. Calcutta. 1900-1901. 2 v. 8°.
- v. 1. Text. v. 2. Plates.
- Finley, John P.** Tornadoes. What they are and how to observe them; with practical suggestions for the protection of life and property. New York. 1887. 196 p. 12°.
- Garriott, E. B.** Storms of the Great Lakes. Washington. 1903. 9 p., 968 charts. 4°. (United States. Weather bureau. Bulletin K.)
- Charts of all important storms of the Great Lakes during the 25 years 1876-1900.
- Garriott, E. B.** West Indian hurricanes. Washington. 1900. 69 p. 4°. (United States. Weather bureau. Bulletin H.)
- Great Britain. Meteorological office.** A barometer manual for the use of seamen; with an appendix on the thermometer, hygrometer, and hydrometer. 6th ed. London. 1909. 67 p. 8°. (Official, no. 61.)
- Hazen, H. A.** The tornado. New York. 1890. ii, 143 p. 12°. (Fact and theory papers.)
- Köppen, W.** Grundlinien der maritimen Meteorologie . . . Hamburg. 1899. vi, 83 p. 12°.
- Piddington, Henry.** The sailor's horn-book for the law of storms; being a practical exposition of the theory of the law of storms, and its uses to mariners of all classes, in all parts of the world . . . 6th ed. London. 1876. xviii, 408 p. 8°.

## 6. ECONOMIC EFFECTS OF EXTREME TEMPERATURES.

- Garriott, E. B.** Notes on frost. Revised ed. Washington. 1908. 31 p. 8°. (United States. Department of agriculture. Farmers' bulletin 104.)
- McAfee, Alexander G.** Frost fighting. Washington. 1900. 15 p. 8°. (United States. Weather bureau. Bulletin 29.)
- Williams, H. E.** Temperatures injurious to food products in storage and during transportation, and methods of protection from the same. [Revised ed.] Washington. 1896. 20 p. 8°. (United States. Weather bureau. Bulletin 13.)

## 7. CLOUDS.

- Barber, Samuel.** The cloud world, its features and significance; being a popular account of forms and phenomena, with an extended glossary. London. 1903. xii, 139 p. 8°.
- Clayden, Arthur W.** Cloud studies. London. 1905. xiii, 184 p. 8°.
- Proposes an elaborate amplification of the international cloud nomenclature. Fully illustrated.
- Clayton, H. Helm.** Observations made at the Blue Hill meteorological observatory . . . Discussion of the cloud observations. Cambridge [Mass.]. 1896. 269-500 p. 4°. (Annals of the Astronomical observatory of Harvard college, v. 30, pt. 4.)
- Includes an extensive history of cloud nomenclature.
- International meteorological committee.** International cloud atlas . . . Paris. 1896. 30 p., xiv plates. f°.
- In French, English, and German. Colored plates. This is the official international classification of clouds, adopted by all countries; but several more detailed classifications, based upon this, have been proposed by cloud specialists.
- Vincent, J.** Atlas des nuages. Bruxelles. 1907. 29 p. f°. (Annales de l'Observatoire royale de Belgique. Nouvelle série. Annales météorologiques.)

## 8. ATMOSPHERIC ELECTRICITY. THUNDERSTORMS. LIGHTNING PROTECTION.

**Anderson, Richard.** Lightning conductors; their history, nature, and mode of application. 3d ed. London, etc. 1885. xv, 470 p. 8°. Bibliography, p. 414-462, includes most of the literature of lightning as well as of lightning conductors from the year 1519.

**Angot, Alfred.** The aurora borealis. London. 1896. xii, 264 p. 8°. (International scientific series.)

**Flammarion, Camille.** Thunder and lightning. Translated by Walter Mostyn. Boston. 1906. 281 p. 12°.

A popular, descriptive work, devoted chiefly to the effects of lightning.

**Gockel, Albert.** Die Luftelektrizität. Methoden und Resultate der neueren Forschung. Leipzig. 1908. vi, 206 p. 8°.

**Gockel, Albert.** Das Gewitter. 2d ed. Köln. 1905. 264 p. 8°.

Elementary treatise on the phenomena of thunderstorms. Contains a chapter on "hail-shooting."

**Hedges, Killingworth.** Modern lightning conductors; an illustrated supplement to the Report of the Lightning research committee of 1905, with notes as to the methods of protection and specifications. London. 1905. vi, 119 p. 4°.

**Henry, Alfred J.** Loss of life in the United States by lightning. Washington. 1901. 21 p. 8°. (United States. Weather bureau. Bulletin 30.)

**Henry, Alfred J.** Recent practice in the erection of lightning conductors. Washington. 1906. 20 p. 8°. (United States. Weather bureau. Bulletin 37.)

**Lodge, Sir Oliver J.** Lightning conductors and lightning guards . . . London. 1892. xii, 544 p. 12°. (Specialists' series.)

**McAdie, Alexander G., & Henry, Alfred J.** Lightning and the electricity of the air . . . Washington. 1899. 74 p. 8°. (United States. Weather bureau. Bulletin 26.)

**Mache, H., & Schweidler, E. von.** Die atmosphärische Elektrizität. Methoden und Ergebnisse der modernen luftelektrischen Forschung. Braunschweig. 1909. xi, 247 p. 8°. (Die Wissenschaft. Heft 30.)

**Spang, Henry W.** A practical treatise on lightning protection. Rev. ed. New York. 1883. 63 p. 12°.

\* **Terrestrial magnetism and atmospheric electricity** . . . [Quarterly.] Baltimore. 1896-date. 8°.

On recent advances in atmospheric electricity consult further the article "Atmospheric electricity" in *Encyclopædia Britannica*, new volumes, v. 25, 1902; the article "Luftelektrizität" in *Meyers grosses Konversations-Lexikon*, 6th ed., v. 12, 1905, and G. C. Simpson, "Normal electrical phenomena of the atmosphere," in *Quarterly journal of the Royal meteorological society*, v. 31, 1905, p. 295-307 (which includes references to the principal literature).

## 9. ATMOSPHERIC OPTICS.

**Pernter, J. M., & Exner, Felix M.** Meteorologische Optik. Wien, etc. 1910. xvii, 799 p. 8°.

The only extensive modern treatise devoted exclusively to this branch of optics; but consult further Mascart, E. *Traité d'optique*, Paris, 1889-1894, especially v. 3.

## 10. INSTRUMENTS. INSTRUCTIONS TO OBSERVERS.

**Abbe, Cleveland.** Treatise on meteorological apparatus and methods. Washington. 1888. 392 p. 8°. (United States. Signal office. Annual report of the chief signal officer for 1887, appendix 46.)

**Angot, Alfred.** Instructions météorologiques. 4th ed. Paris. 1903. vi, 163 p. 8°.

\* **Great Britain.** *Meteorological office.* The observer's handbook . . . Annual edition. London. 1909-date. 8°. (M. O. 191.)

**Guillaume, Ch. Ed.** *Traité pratique de la thermométrie de précision.* Paris. 1889. xv, 336 p. 8°.

A standard treatise on thermometry.

**Heiskell, Henry L.** Instructions to the marine meteorological observers of the U. S. Weather bureau. 3d ed. Washington. 1910. 8°. (United States. Weather bureau. [Publication.] )

- [Jelinek, Carl.] Jelineks Anleitung zur Ausführung meteorologischer Beobachtungen nebst einer Sammlung von Hilfstafeln. 5th ed. Wien. 1905-1910. 2 pts. 4°. (Austria. K. k. Zentralanstalt für Meteorologie und Geodynamik. [Publication.])
- Marriott, William. Hints to meteorological observers. 6th ed. London. 1906. 69 p. 8°. (Royal meteorological society. [Publication.])
- Marvin, C. F. Anemometry . . . 3d ed. Washington. 1907. 76 p. 8°. (United States. Weather bureau. Circular D, Instrument division.)
- Marvin, C. F. Barometers and the measurement of atmospheric pressure . . . 3d ed. Washington. 1909. 110 p. 8°. (United States. Weather bureau. Circular F, Instrument division.)
- Marvin, C. F. Instructions for obtaining and tabulating records from recording instruments. 2d ed. Washington. 1903. 31 p. 8°. (United States. Weather bureau. Circular A, Instrument division.)
- Marvin, C. F. Instructions for the care and management of sunshine recorders. 2d ed. Washington. 1901. 19 p. 8°. (United States. Weather bureau. Circular G, Instrument division.)
- Supplementary pages 21-23 issued 1905.
- Marvin, C. F. Measurement of precipitation . . . 2d ed. Washington. 1903. 27 p. 8°. (United States. Weather bureau. Circular E, Instrument division.)
- 3d edition in preparation.
- Prussia. *K. preussisches meteorologisches Institut.* Anleitung zur Anstellung und Berechnung meteorologischer Beobachtungen. 2d ed. Berlin. 1904-1905. 2 pts. 4°.
- United States. *Weather bureau.* Instructions for cooperative observers. 3d edition, comprising circulars B and C, Instrument division. Washington, 1906. 31 p. 8°.

## 11. TABLES.

- International meteorological committee. International meteorological tables . . . Paris. 1890. v. p. f°.
- In French, English, and German.
- [Jelinek, Carl.] Jelineks Psychrometer-Tafeln erweitert und vermehrt von J. Hann; neu herausgegeben und mit Hygrometer-Tafeln versehen von J. M. Pernter. 5th ed. Leipzig. 1903. xiii, 107 p. f°.
- Includes bibliography of the psychrometer and the hair hygrometer, p. xi-xiii.
- Marvin, C. F. Psychrometric tables for obtaining the vapor pressure, relative humidity, and temperature of the dew-point from readings of the wet and dry bulb thermometers. Washington. 1910. 87 p. 8°. (United States. Weather bureau. W. B. no. 235.)
- Smithsonian institution. Smithsonian meteorological tables . . . 3d ed. Washington. 1907. lx, 280 p. 8°.
- United States. *Weather bureau.* Tables for dividing by 12, 24, 28, 29, 31, 56, 58, 60, 672, 696, 720, 744, and 8760, and percentage tables for divisors 8.0 to 16.5, inclusive. Washington. 1903. 28 p. 8°.
- Useful for many meteorological computations.

## 12. UPPER AIR INVESTIGATIONS.

- \* *Beiträge zur Physik der freien Atmosphäre.* Zeitschrift für die wissenschaftliche Erforschung der höheren Luftschichten . . . Strassburg. 1904-date. 4°.
- Appears irregularly. Papers mostly in German; sometimes in English or French.
- Fergusson, S. P. Kites and instruments employed in the exploration of the air at Blue Hill observatory, 1897 to 1902. Cambridge [Mass.]. 1904. [215]-239 p. 4°. (Annals of the Astronomical observatory of Harvard college, v. 43, pt. 3, Appendix D.)
- Gold, E., & Harwood, W. A. The present state of our knowledge of the upper atmosphere as obtained by the use of kites, balloons, and pilot balloons. [London.] [1909.] 54 p. 8°.
- Preprint from Rept. British association for the advancement of science, Winnipeg, 1909. A handy digest of the subject.

- Great Britain.** *Meteorological office.* The free atmosphere in the region of the British isles. Contributions to the investigation of the upper air . . . London. 1909. iv, 56 p. f°. (M. O. 202.)
- Hildebrandt, A.** *Airships past and present* . . . Translated by W. H. Story. London. 1908. xvi, 364 p. 8°.
- Chapter 19. Scientific ballooning.
- Marvin, C. F.** *Instructions for aerial observers.* Washington. 1898. 33 p. 8°. (United States. Weather bureau. Circular K, Instrument division.)
- Moedebeck, Hermann W. L.** *Pocket-book of aeronautics* . . . Translated by W. Mansergh Varley. London. 1907. xiii, 496 p. 16°.
- Rotch, A. Lawrence.** *Sounding the ocean of air* . . . London. 1900. viii, [9]-184 p. 16°. (Romance of science.)
- Wagner, Arthur.** *Die Temperaturverhältnisse in der freien Atmosphäre (Ergebnisse der internationalen unbemannten Ballonaufstiege).* Leipzig. 1909. [57]-[168] p. 4°. (Beiträge zur Physik der freien Atmosphäre, Band 3, Heft 2-3.)

### 13. HYDROLOGY. RIVERS AND FLOODS.

- Fritzsche, Richard.** *Niederschlag, Abfluss und Verdunstung auf den Landflächen der Erde.* Halle a. S. 1906. 54 p. 8°. (Inaug.-Diss.—Halle.)
- S. A. Zeitschrift für Gewässerkunde, v. 7, p. 321-370. Collates the data of rainfall, stream flow, and evaporation for all parts of the world. Includes statistics of discharge of 52 important rivers, with references to authorities.
- Morrill, Park.** *Floods of the Mississippi river.* Washington. 1897. vi, 79 p., 58 plates. 4°. (United States. Weather bureau. Bulletin E.)

### 14. PHENOLOGY. AGRICULTURAL METEOROLOGY.

- Abbe, Cleveland.** *A first report on the relations between climates and crops.* Washington. 1905. 386 p. 8°. (United States. Weather bureau. Bulletin 36.)
- "A summary of the views of the best experimentalists and observers, so far as those had been published up to 1891."
- Presents the essentials of the classical contributions of Linnser, Hoffmann, Fritsch, De Candolle, Quetelet, Angot, etc.
- Bibliography, p. 365-375.
- Günther, Siegmund.** *Die Phänologie, ein Grenzgebiet zwischen Biologie und Klimakunde.* Münster. 1895. 51 p. 8°.
- "Sonderabdruck aus 'Natur und Offenbarung.' 41. Band. Münster, 1895."
- Royal meteorological society, London.** *Instructions for the observation of phenological phenomena* . . . 2d ed. London. 1883. 10 p. 8°.

The article "Phänologie" in Myers grosses Konversations-Lexikon, 6th ed. (Leipzig, etc., 1906), is a good résumé of the subject to 1906, and includes reproductions of some of the principal phenological charts of Europe.

### 15. PHYSIOLOGICAL AND MEDICAL METEOROLOGY.

- Bebber, W. J. van.** *Hygienische Meteorologie für Ärzte und Naturforscher.* Stuttgart. 1895. x, 330 p. 8°.
- Dexter, Edwin Grant.** *Weather influences; an empirical study of the mental and physiological effects of definite meteorological conditions.* With introduction by Cleveland Abbe. New York. 1904. xxxi, 286 p. 8°.
- Effects of weather on crime, insanity, health, suicide, etc.
- Giles, G. M.** *Climate and health in hot countries, and the outlines of tropical climatology* . . . New York. 1905. xviii, 184, 109 p. 8°.
- Huggard, William R.** *A handbook of climatic treatment, including balneology.* London, etc. 1906. xiii, 556 p. 8°.
- Royal medical and chirurgical society of London.** *The climates and baths of Great Britain* . . . London, etc. 1895-1902. 2 v. 8°.
- Written from the medical standpoint, but embraces a large amount of purely climatological information respecting individual regions and localities throughout the British Isles, exclusive of Scotland.
- Solly, S. Edwin.** *A handbook of medical climatology, embodying its principles and therapeutic application, with scientific data of the chief health resorts of the world.* Philadelphia, etc. 1897. xii, [17]-470 p. 8°.
- Weber, Sir Hermann, & Weber, F. Parkes.** *Climatotherapy and balneotherapy; the climates and mineral water health resorts (spas) of Europe and North Africa* . . . London. 1907. 833 p. 4°.
- Bibliography, p. 745-774.



**Weber, F. Parkes, & Hinsdale, Guy.** *Climatology; health resorts; mineral springs.* Philadelphia. 1902. 2 v. 8°. (Cohen, Solomon Solis, *ed.* A system of physiologic therapeutics, v. 3 and 4.)

The sections devoted to the United States, by Hinsdale, are designed to be "the most nearly complete account of the health resorts of the United States yet published."

**Zuntz, N., & others.** *Höhenklima und Bergwanderungen in ihrer Wirkung auf den Menschen; Ergebnisse experimenteller Forschungen in Hochgebirge und Laboratorium.* Berlin, *etc.* 1906. xvi, 494 p. 4°.

One of the most complete of the numerous investigations of the physiological effects of high altitudes. Includes references to most of the literature of this subject.

## 16. CLIMATOLOGY.

**Brückner, Eduard.** *Klimaschwankungen seit 1700 nebst Bemerkungen über die Klimaschwankungen der Diluvialzeit.* Wien, *etc.* 1890. viii, 324 p. 4°. (Geographische Abhandlungen herausgegeben von Dr. Albrecht Penck . . . Band 4, Heft 2.)

The most famous of books dealing with climatic oscillations. Argues in favor of a 35-year period.<sup>1</sup>

**Hann, Julius.** *Handbook of climatology . . . Part I. General climatology.* Translated . . . from the second revised and enlarged German edition, with additional references and notes, by Robert DeCourcy Ward. New York. 1903. xiv, 437 p. 8°.

**Hann, Julius.** *Handbuch der Klimatologie.* 3d ed. Stuttgart. 1908—. 8°.

In course of publication. The most complete and useful treatise on climatology. v. 1 deals with general climatology. The remainder of the work discusses special climatology; i. e., the climatology of all parts of the world; and contains references to the principal literature.

**Köppen, W.** *Klimakunde. I. Allgemeine Klimalehre.* 2d ed. Leipzig. 1906. 132 p. 16°. (Sammlung Göschen.)

**Meyer, Hugo.** *Anleitung zur Bearbeitung meteorologischer Beobachtungen für die Klimatologie.* Berlin. 1891. viii, 187 p. 8°.

A treatise on the mathematical and graphical treatment of meteorological data for the purposes of climatology.

**Ward, Robert DeCourcy.** *Climate, considered especially in relation to man.* New York, *etc.* 1908. xv, 372 p. 8°. (Science series, no. 20.)

Intended as a supplement to the author's translation of Hann's *Handbuch der Klimatologie*, v. 1, and deals chiefly with the human relations of climate.

## 17. CLIMATOGRAPHY.

(Countries arranged in the order adopted in the topographical classification of the International catalogue of scientific literature. The letters refer to the subdivisions used in that classification.)

### \* a (INCL. b & c). THE EARTH AS A WHOLE.

**Bartholomew, J. G.** *Atlas of meteorology; a series of over four hundred maps . . .* Westminster. 1899. 40, xiv p., 34 plates. f°. (Bartholomew's Physical atlas, v. 3.)

The most complete collection of climatic charts, showing the distribution of temperature, pressure, winds, clouds, sunshine, and rainfall over the globe; also charts of storm tracks, storm frequency, and weather types. Descriptive letter-press.

*Appendices:* Meteorological services and their publications.—Bibliography.—Glossary of meteorological terms.—Meteorological tables.

**Buchan, Alexander.** *Report on atmospheric circulation.* London, *etc.* 1889. vi, 263 p., 52 maps. f°. (Report on the scientific results of the voyage of H. M. S. *Challenger* . . . Physics and chemistry—v. 2, pt. 5.)

Comprises monthly and yearly normals of pressure, temperature and wind for a great number of stations throughout the world; temperature, pressure, and wind charts.

**Dunwoody, H. H. C.** *Summary of international meteorological observations.* Washington. 1893. x p., 59 maps. 48x60cm. (United States. Weather bureau. Bulletin A.)

Pressure, wind, temperature, and storm charts of the northern hemisphere, based on upwards of 5,000,000 observations during the years 1878 to 1887, incl. Compiled by E. B. Garriott.

**Hann, Julius.** *Handbuch der Klimatologie. 2. Band: Klimatographie.*

See above. The standard reference book on climatology. Note that the English translation of the 2d ed., by Ward, does not include the climatographic portion of this work, which is only accessible in German.

<sup>1</sup> For a review of the literature relating to climatic changes and oscillations (with a bibliography) see Supan, Alexander. *Grundzüge der physischen Erdkunde.* 4th ed. Leipzig. 1908. p. 229-353. Also Hann, J. *Handbuch der Klimatologie*, 3d ed., I. Band, p. 345, *et seq.*

**Herbertson, Andrew J.** The distribution of rainfall over the land. London. 1901. 70 p. 8°. (Royal geographical society. [Publication.])

Includes monthly and yearly isohyetal charts; bibliography; table of rainfall normals for many stations not included in Supan's "Verteilung des Niederschlags."

**Supan, Alexander.** Die Verteilung des Niederschlags auf der festen Erdoberfläche. Gotha. 1898. iv, 103 p. 4°. (Petermanns Mitteilungen, Ergänzungsheft No. 124.)

The tables herein are the chief collection of rainfall normals for the world at large, exclusive of Europe.

#### db. RUSSIA IN EUROPE.

**Russia.** *Observatoire physique central Nicolas.* Atlas climatologique de l'empire de Russie . . . St. Pétersbourg. 1900. 89 maps, 15 graphic tables. f°. *Same.* Notice explicative. St. Pétersbourg. 1900. xiv, 61 p. 4°.

Large collection of climatic charts based on data down to 1895. This is the crowning work in a series of fundamental treatises on Russian climatology, by the officials of the Central physical observatory, the titles of which will be found enumerated in the introduction to the atlas.

#### dc. GERMANY.

**Hellmann, G.** Die Niederschläge in den norddeutschen Stromgebieten. Berlin. 1906. 3 v. 4°.

A vast compilation of collected data and normals of precipitation for the greater part of Germany and extensive areas of contiguous countries. v. 1 contains elaborate analysis of special features of the precipitation; a bibliography (p. 31-36); and a detailed rainfall chart of Germany.

**Thiele, Paul.** Deutschlands landwirtschaftliche Klimatographie . . . Bonn. 1895. viii, 184 p. 8°.

#### de. BRITISH ISLES.

**Great Britain.** *Meteorological office.* Rainfall tables of the British Islands, 1866-1890. London. 1897. ii, 283 p. 8°. (Official, no. 114.)

**Royal medical and chirurgical society of London.** The climates and baths of Great Britain . . .

See above, p. 11.

#### dh. ITALY.

**Roster, Giorgio.** Climatologia dell'Italia nelle sue attinenze con l'igiene e con l'agricoltura . . . Torino. 1909. xxix, 1040 p. 8°.

#### di. SWITZERLAND.

**Maurer, Jul., & others.** Das Klima der Schweiz, auf Grundlage der 37jährigen Beobachtungsperiode 1864-1900 . . . Frauenfeld. 1909—. 2 v. f°.

#### dk. AUSTRIA-HUNGARY.

**Austria.** *K. k. Zentralanstalt für Meteorologie und Geodynamik.* Klimatographie von Österreich. Wien. 1904—. 4°.

Appearing in parts.

#### ea. ASIATIC RUSSIA.

**Russia.** *Observatoire physique central Nicolas.* Atlas climatologique de l'empire de Russie . . .

See above, under db.

#### ec. JAPANESE ISLANDS.

[**Nakamura, K.**] The climate of Japan. Tokio. 1893. 109 p. 4°. (Japan. Central meteorological observatory. [Publication.])

#### ef. BRITISH INDIA.

**Blanford, Henry F.** A practical guide to the climates and weather of India, Ceylon and Burmah, and the storms of Indian seas . . . London. 1889. xiii, 369 p. 8°.

**Eliot, Sir John.** Climatological atlas of India. Edinburgh. 1906. xxxii p., 120 maps. f°. (India. Meteorological department. [Publication.])

A very complete graphical presentation of the Indian climate. The numerical statistics upon which it is based were published in Indian meteorological memoirs, v. 17, Calcutta, 1904.

*eg.* PHILIPPINE ISLANDS.

**Algué, José.** The climate of the Philippines. [Washington.] 1904. 103 p. 8°. ((United States.) Bureau of the census. Census of the Philippine Islands, 1903. Bulletin 2.)

**Saderra Masó, Miguel.** The rainfall in the Philippines. Manila. 1907. 32 p. 4°. (Philippine Islands. Weather bureau. [Publication.] )

*ga.* ALASKA.

**Abbe, Cleveland, jr.** The climate of Alaska. Washington. 1906. 133-200 p. 4°. "Extract from Professional Paper No. 45, U. S. Geological Survey."

*gf.* UNITED STATES AS A WHOLE.

**Bigelow, Frank Hagar.** The daily normal temperature and the daily normal precipitation of the United States. Washington. 1908. 186 p. 4°. (United States. Weather bureau. Bulletin R.)

**Bigelow, Frank H.** Report on the temperatures and vapor tensions of the United States, reduced to a homogeneous system of 24 hourly observations for the 33-year interval, 1873-1905. Washington. 1909. 302 p. 4°. (United States. Weather bureau. Bulletin S.)

**Blodget, Lorin.** Climatology of the United States, and of the temperate latitudes of the North American continent . . . Philadelphia. 1857. xvi, [17]-536 p. 4°.

Valuable repository of early observations; particulars of notable storms, cold waves, etc.

**Henry, Alfred Judson.** Climatology of the United States. Washington. 1906. 1012 p. 4°. (United States. Weather Bureau. Bulletin Q.)

The standard descriptive and statistical work on this subject.

**Henry, Alfred J.** Rainfall of the United States, with annual, seasonal, and other charts. Washington. 1897. 58 p. 4°. (United States. Weather bureau. Bulletin D.)

Also published as part 7 of United States. Weather bureau. Report of the chief, 1896-97. Washington, 1897.

**United States.** *Weather bureau.* Climatic charts of the United States. [2d ed.] Washington. 1904. 26 maps. f°. (W. B. no. 301.)

**United States.** *Weather bureau.* Summary of the climatological data for the United States, by sections. Washington. [1908]—. 4°.

In course of publication. A compilation of climatological (especially rainfall) data for selected stations throughout the United States; also includes hydrographic data. To be complete in 106 parts.

*gi.* WESTERN UNITED STATES.

**McAdie, Alexander G.** Climatology of California. Washington. 1903. 270 p. 4°. (United States. Weather bureau. Bulletin L.)

*hd-hm.* SOUTH AMERICA.

**Voss, Ernst Ludwig.** Die Niederschlagsverhältnisse von Südamerika. Gotha. 1907. iv, 59 p. 4°. (Petermanns Mitteilungen, Ergänzungsheft no. 157.)

Includes rainfall statistics of 378 South American stations; monthly, seasonal, and yearly isohyetal charts; and descriptive bibliography of South American climatology.

*hi.* ARGENTINA.

**Davis, Walter G.** Climate of the Argentine Republic. Buenos Aires. 1910. 111 p., 44 plates. 4°. (Argentine Republic. Department of agriculture. [Publication.] )

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